

# Operating Instructions

## VEGABAR 17



Document ID:  
27636



Process pressure

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**Supplementary documentation****Information:**

Supplementary documents appropriate to the ordered version come with the delivery. You can find them listed in chapter "*Product description*".

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## 1 About this document

### 1.1 Function

This operating instructions manual provides all the information you need for mounting, connection and setup as well as important instructions for maintenance and fault rectification. Please read this information before putting the instrument into operation and keep this manual accessible in the immediate vicinity of the device.

### 1.2 Target group

This operating instructions manual is directed to trained qualified personnel. The contents of this manual should be made available to these personnel and put into practice by them.

### 1.3 Symbolism used



#### Information, tip, note

This symbol indicates helpful additional information.



**Caution:** If this warning is ignored, faults or malfunctions can result.

**Warning:** If this warning is ignored, injury to persons and/or serious damage to the instrument can result.

**Danger:** If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.



#### Ex applications

This symbol indicates special instructions for Ex applications.



#### List

The dot set in front indicates a list with no implied sequence.



#### Action

This arrow indicates a single action.



#### Sequence

Numbers set in front indicate successive steps in a procedure.



#### Battery disposal

This symbol indicates special information about the disposal of batteries and accumulators.

## 2 For your safety

### 2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the plant operator.

During work on and with the device the required personal protective equipment must always be worn.

### 2.2 Appropriate use

VEGABAR 17 is a pressure transmitter for measurement of gauge pressure, absolute pressure and vacuum.

You can find detailed information on the application range in chapter "*Product description*".

Operational reliability is ensured only if the instrument is properly used according to the specifications in the operating instructions manual as well as possible supplementary instructions.

For safety and warranty reasons, any invasive work on the device beyond that described in the operating instructions manual may be carried out only by personnel authorised by the manufacturer. Arbitrary conversions or modifications are explicitly forbidden.

### 2.3 Warning about incorrect use

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

### 2.4 General safety instructions

This is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

The instrument must only be operated in a technically flawless and reliable condition. The operator is responsible for trouble-free operation of the instrument.

During the entire duration of use, the user is obliged to determine the compliance of the necessary occupational safety measures with the current valid rules and regulations and also take note of new regulations.

## 2.5 Safety label on the instrument

The safety approval markings and safety tips on the device must be observed.

## 2.6 CE conformity

The device fulfills the legal requirements of the applicable EC guidelines. By affixing the CE marking, we confirm successful testing of the product.

You can find the conformity certificate in the download section of our homepage.

## 2.7 Measuring range - permissible process pressure

Due to the application, a measuring cell with a measuring range higher than the permissible pressure range of the process fitting may have been integrated. The permissible process pressure is stated with "Process pressure" on the type label, see chapter 3.1 "*Configuration*". For safety reasons, this range must not be exceeded.

## 2.8 Safety instructions for Ex areas

Please note the Ex-specific safety information for installation and operation in Ex areas. These safety instructions are part of the operating instructions manual and come with the Ex-approved instruments.

## 2.9 Environmental instructions

Protection of the environment is one of our most important duties. That is why we have introduced an environment management system with the goal of continuously improving company environmental protection. The environment management system is certified according to DIN EN ISO 14001.

Please help us fulfil this obligation by observing the environmental instructions in this manual:

- Chapter "*Packaging, transport and storage*"
- Chapter "*Disposal*"

## 3 Product description

### 3.1 Structure

#### Scope of delivery

The scope of delivery encompasses:

- VEGABAR 17 process pressure transmitter
- Depending on the version, with plug connector, connection cable or terminal housing
- Documentation
  - this operating instructions manual
  - Ex-specific "*Safety instructions*" (with Ex versions)
  - if necessary, further certificates

#### Structure

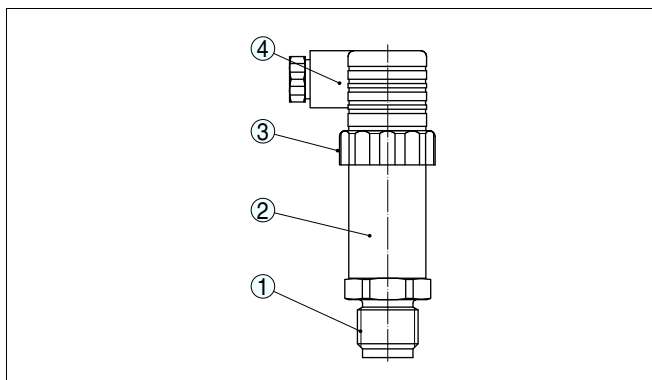


Fig. 1: VEGABAR 17 with plug connector according to ISO 4400

- 1 Process fitting
- 2 Housing with electronics
- 3 Pressure compensation (beneath the knurled nut)
- 4 Plug connector

#### Type label

The type label contains the most important data for identification and use of the instrument:

- Article number
- Serial number
- Technical data
- Article numbers, documentation

With the serial number, you can access the delivery data of the instrument via [www.vega.com](http://www.vega.com), "VEGA Tools" and "serial number search". In addition to the type label outside, you can also find the serial number on the inside of the instrument.

## 3.2 Principle of operation

<b>Application area</b>	VEGABAR 17 is a pressure transmitter for measurement of gauge pressure, absolute pressure or vacuum. Measured products are gases, vapours and liquids. The front flush versions are also suitable for use in viscous or contaminated products.
<b>Functional principle</b>	The process pressure acts on the sensor element via the stainless steel diaphragm. The process pressure causes a resistance change which is converted into a corresponding output signal and outputted as measured value. <sup>1)</sup>
<b>Voltage supply</b>	4 ... 20 mA two-wire electronics for voltage supply and measured value transmission on the same cable.

## 3.3 Operation

The VEGABAR 17 has no adjustment options.

However, there are two built-in potentiometers for recalibration of zero and span.

## 3.4 Packaging, transport and storage

<b>Packaging</b>	<p>Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test according to DIN EN 24180.</p> <p>The packaging of standard instruments consists of environment-friendly, recyclable cardboard. For special versions, PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.</p>
<b>Transport</b>	Transport must be carried out under consideration of the notes on the transport packaging. Nonobservance of these instructions can cause damage to the device.
<b>Transport inspection</b>	The delivery must be checked for completeness and possible transit damage immediately at receipt. Ascertained transit damage or concealed defects must be appropriately dealt with.
<b>Storage</b>	<p>Up to the time of installation, the packages must be left closed and stored according to the orientation and storage markings on the outside.</p> <p>Unless otherwise indicated, the packages must be stored only under the following conditions:</p> <ul style="list-style-type: none"><li>● Not in the open</li></ul> <p><sup>1)</sup> Measuring ranges up to 16 bar: piezoresistive sensor element with internal transmission liquid. Measuring ranges up to 25 bar: strain gauge (DMS) sensor element on the rear of the stainless steel diaphragm (dry).</p>



**Storage and transport temperature**

- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage and transport temperature see chapter "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 ... 85 %

## 4 Mounting

### 4.1 General instructions

#### Suitability for the process conditions

Make sure that all parts of the instrument exposed to the process, in particular the sensor element, process seal and process fitting, are suitable for the existing process conditions. These include above all the process pressure, process temperature as well as the chemical properties of the medium.

You can find the specifications in chapter "*Technical data*" and on the type label.

#### Diaphragm protection

To protect the diaphragm, the process fitting is covered by a protective cap.

Remove the protective cap just before installation so that the diaphragm will not get damaged. It is recommended to keep the cap and use it again later for storage or transport.

### 4.2 Instructions for installation

#### Checking the diaphragm

Please check the diaphragm visually for damage and leaking fluid before mounting and setting up the instrument. Make sure that the diaphragm doesn't get damaged during installation.



#### Caution:

The instrument may only be used if it is in a technically flawless condition and has an undamaged diaphragm.

#### Mounting position

VEGABAR 17 functions in any installation position. It is mounted according to the same directives as a manometer (DIN EN 839-2).



#### Information:

We recommend using lock fittings, measuring instrument holders and siphons from our line of accessories.

### 4.3 Mounting steps

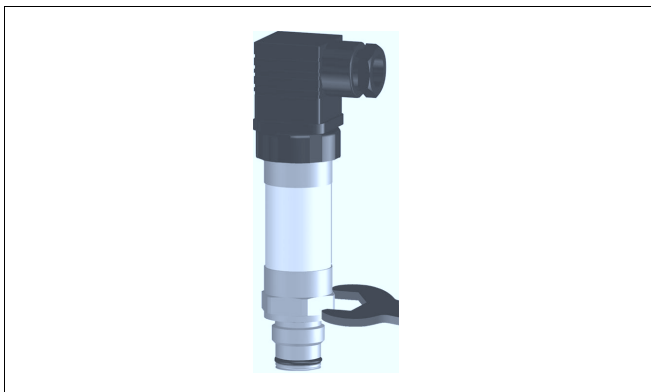
#### Welding the socket

For mounting VEGABAR 17, a welded socket is required. You can find these components in the supplementary instructions manual "*Welded socket and seals*".

#### Sealing/Screwing in

Use the seal fitting to the instrument, or in case of NPT connections, a high-resistance sealing material.

Screw VEGABAR 17 into the welded socket with a wrench applied to the hexagon of the process fitting. For the proper torque see chapter "*Technical data*", for spanner size see chapter "*Dimensions*".



*Fig. 2: Mounting of VEGABAR 17*

## 5 Connecting to power supply

### 5.1 Preparing the connection

#### Note safety instructions

Always keep in mind the following safety instructions:

- Connect only in the complete absence of line voltage
- If overvoltage surges are expected, overvoltage arresters should be installed



#### Tip:

We recommend VEGA overvoltage arrester ÜSB 62-36G.X.

#### Take note of safety instructions for Ex applications



In hazardous areas you must take note of the respective regulations, conformity and type approval certificates of the sensors and power supply units.

#### Select power supply

The supply voltage and the current signal are carried on the same two-wire connection cable.

Provide a reliable separation between the supply circuit and the mains circuits according to DIN VDE 0106 part 101.

VEGA power supply units VEGATRENN 149AEx, VEGASTAB 690, VEGADIS 371 as well as all VEGAMETs meet this requirement. When using one of these instruments, protection class III is ensured for VEGABAR 17.

Keep in mind the following additional factors that influence the operating voltage:

- Output voltage of the power supply unit can be lower under nominal load (with a sensor current of 20.5 mA or 22 mA in case of fault message)
- Influence of additional instruments in the circuit (see load values in chapter "*Technical data*")

#### Select connection cable

The instrument is connected with standard two-wire cable without screen. If electromagnetic interference is expected which is above the test values of EN 61326 for industrial areas, screened cable should be used.

Use cable with round cross-section. A cable outer diameter of 5 ... 9 mm (0.2 ... 0.35 in) ensures the seal effect of the cable gland. If you are using cable with a different diameter or cross-section, exchange the seal or use a suitable cable gland.

For the version with round plug connector M12 x 1, a suitable, ready-made connection cable (article no. ASL.1S.) in 5 m, 10 m or 25 m lengths is available from the line of VEGA accessories.

### Cable screening and grounding

Connect the cable screen on both ends to ground potential.

If potential equalisation currents are expected, the connection on the processing side must be made via a ceramic capacitor (e. g. 1 nF, 1500 V). The low frequency potential equalisation currents are thus suppressed, but the protective effect against high frequency interference signals remains.



#### Warning:

Considerable potential differences exist inside galvanic plants as well as vessels with cathodic corrosion protection. Very large equalisation currents can flow through the cable screen when the screen is grounded on both ends. To avoid this, the cable screen must be connected to ground potential only on one end (inside the switching cabinet) in such applications. The cable screen must **not** be connected to the internal ground terminal in the sensor and the outer ground terminal on the housing **not** to potential equalisation!



#### Information:

The metallic parts of the instrument (antenna, transmitter, concentric tube, etc.) are conductively connected with the inner and outer ground terminal on the housing. This connection exists either as a direct metallic contact or via the shielding of the special connection cable on instruments with external electronics. You can find specifications on the potential connections within the instrument in chapter "*Technical data*".

### Select connection cable for Ex applications



Take note of the corresponding installation regulations for Ex applications.

## 5.2 Connection procedure

### Connection via angle plug connector

Proceed as follows:

- 1 Loosen the screw on the rear of the plug connector
- 2 Remove the plug connector and seal from VEGABAR 17
- 3 Remove the plug insert from the plug housing

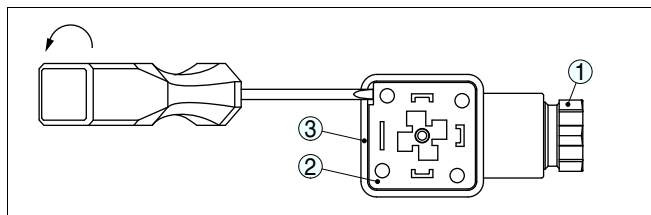


Fig. 3: Loosen the plug insert

- 1 Cable gland
- 2 Plug insert
- 3 Plug housing

- 4 Remove approx. 5 cm of the cable mantle, strip approx. 1 cm insulation from the individual wires
- 5 Lead the cable through the cable gland into the plug housing
- 6 Connect the wire ends to the screw terminals according to the wiring plan

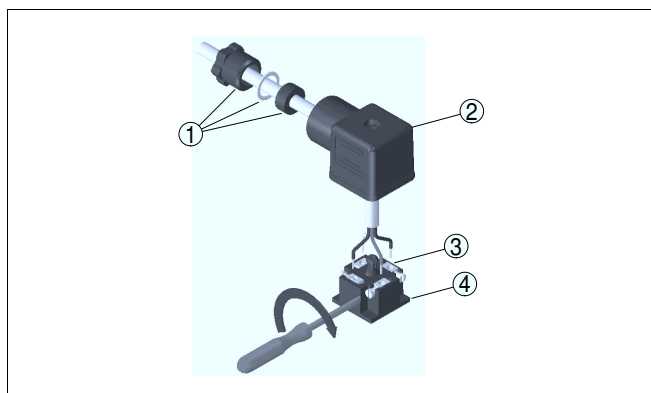


Fig. 4: Connection to the screw terminals

- 1 Cable gland
- 2 Plug housing
- 3 Plug insert
- 4 Plug seal

- 7 Snap the plug insert into the plug housing and insert the sensor seal
- 8 Plug the plug insert with seal to VEGABAR 17 and tighten the screw

The electrical connection is finished.

#### Connection via angle plug connector with hinged cover

Proceed as follows:

- 1 Loosen the screw in the cover of the plug connector
- 2 Open the cover and remove it
- 3 Press the plug insert downwards
- 4 Loosen the screws of the strain relief and cable entry

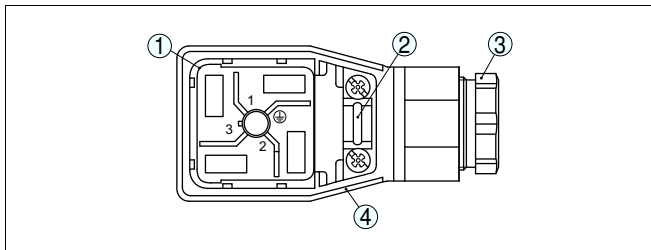


Fig. 5: Loosen the plug insert

- 1 Plug insert
- 2 Strain relief
- 3 Cable gland
- 4 Plug housing

- 5 Remove approx. 5 cm of the cable mantle, strip approx. 1 cm insulation from the individual wires
- 6 Lead the cable through the cable gland into the plug housing
- 7 Connect the wire ends to the screw terminals according to the wiring plan

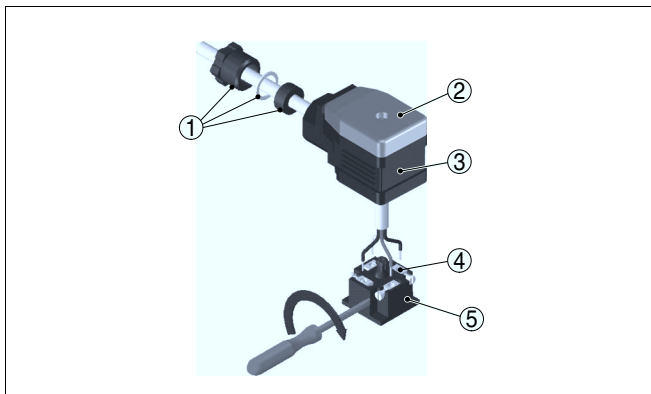


Fig. 6: Connection to the screw terminals

- 1 Cable gland
- 2 Cover
- 3 Plug housing
- 4 Plug insert
- 5 Plug seal

- 8 Snap the plug insert into the plug housing and insert the sensor seal


**Information:**

Note the correct arrangement, see illustration

- 9 Tighten the screws on the strain relief and cable entry
- 10 Hook in the cover and push onto the plug connection, tighten cover screw
- 11 Plug the plug insert with seal to VEGABAR 17 and tighten the screw

The electrical connection is finished.

### 5.3 Wiring plan

#### Angled plug connector according to ISO 4400

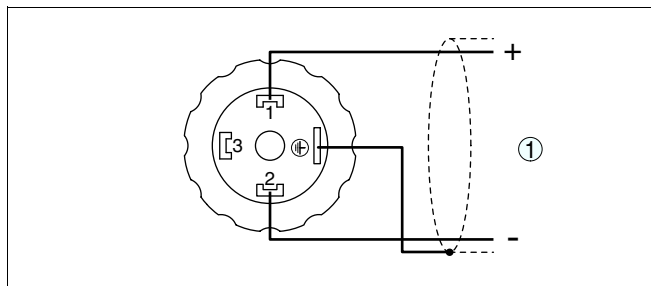


Fig. 7: Wiring plan, angle plug connector according to ISO 4400, top view to VEGABAR 17

1 Voltage supply and signal output

#### Round plug connector M12 x 1

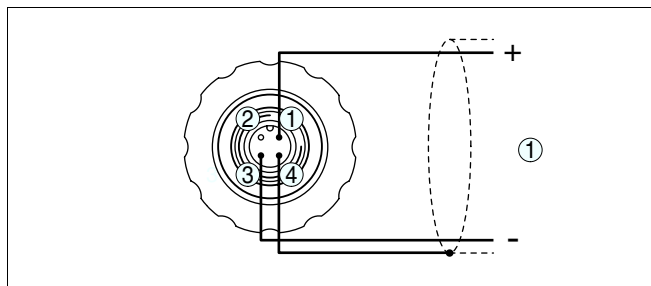


Fig. 8: Wiring plan, round plug connector M12 x 1, top view to VEGABAR 17

1 Voltage supply and signal output

#### Connection via connection cable with 4-pole socket M12 x 1 (accessory)



Wire colour	Socket
Brown	1
White	2
Blue	3
Black	4

### Cable outlet

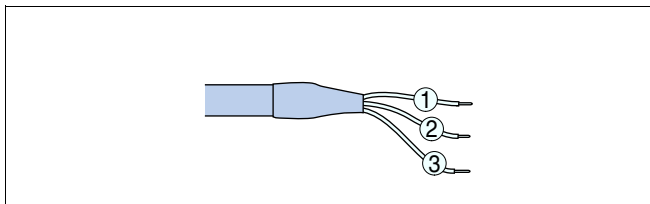


Fig. 9: Wiring plan cable outlet

- 1 brown (+) power supply and signal output
- 2 green (-) power supply and signal output
- 3 blue = cable screen

### Terminal housing

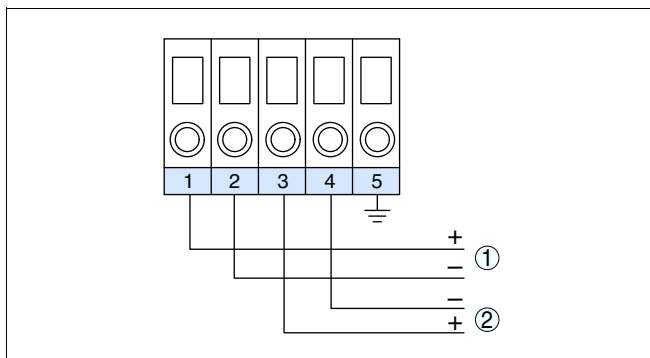


Fig. 10: Wiring plan, terminal housing

- 1 To power supply or the processing system
- 2 Control instrument (4 ... 20 mA measurement)

## 6 Setup

### 6.1 Setup steps

After mounting and electrical connection, VEGABAR 17 is ready for operation.

VEGABAR 17 delivers a current of 4 ... 20 mA corresponding to the actual process pressure.

Further settings are not necessary.

### 6.2 Recalibration

With both instruments with thread ring or field housing, zero and span can be adjusted via integrated potentiometers. Adjustment range:

- Zero  $\pm 5\%$
- Span  $\pm 5\%$

This allows, for example, the consideration of an installation position different from the reference installation position.

A shifting of zero shifts span also respectively.



**Note:**

The potentiometer for span should only be used if you have adequate calibration equipment (at least 3 times more precise than the deviation of VEGABAR 17).

Recommended recalibration cycle: 1 year.

**Instruments with plug connector or cable outlet**

Proceed as follows:

- 1 Loosen the plug connector and screw the screwed ring in connected status
- 2 Place the plug connector onto the instrument place and pull both carefully out of the instrument

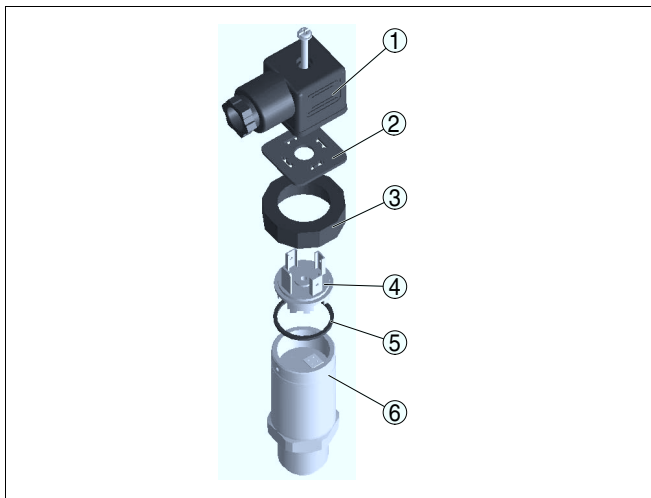


Fig. 11: Open the instrument

- 1 Plug connector
- 2 Plug seal
- 3 Screwed ring
- 4 Instrument plug
- 5 Plug seal
- 6 Housing

- 3 Set zero in unpressurized status, check 4 mA signal in the circuit
- 4 Set span with exact reference pressure
- 5 Check zero

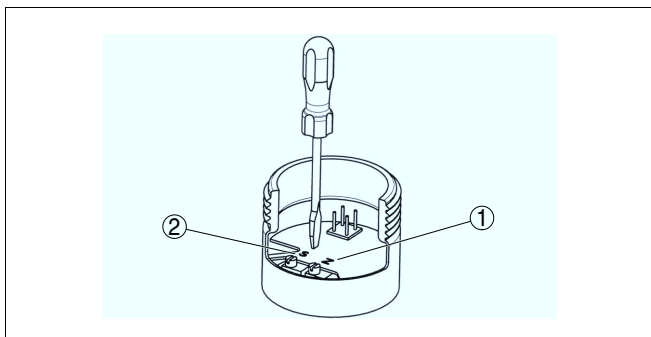


Fig. 12: Adjustment of zero and span

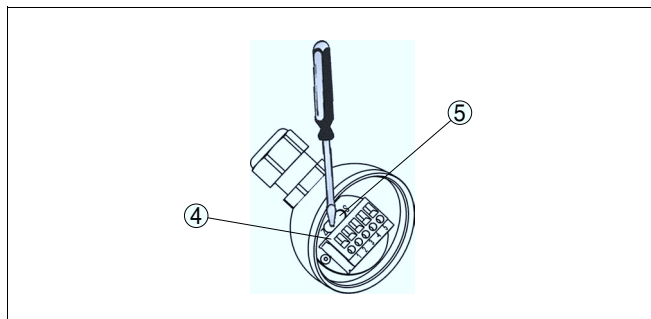
- 1 zero (Z)
- 2 span (S)

- 6 Assemble the instrument and connect it.

**Instruments with terminal housing**

Proceed as follows:

- 1 Screw on the housing cover in connected status



*Fig. 13: Adjustment of zero and span*

- 1 zero (Z)
- 2 span (S)
- 2 Set zero in unpressurized status, check 4 mA signal in the circuit
- 3 Set a span with a sufficiently precise reference pressure
- 4 Check zero
- 5 Screw the housing cover back on

## 7 Maintenance and fault rectification

### 7.1 Maintenance

If the instrument is used properly, no special maintenance is required in normal operation.

### 7.2 Remove interferences

#### Reaction when malfunctions occur

The operator of the system is responsible for taking suitable measures to rectify faults.

#### Failure reasons

VEGABAR 17 offers maximum reliability. Nevertheless, faults can occur during operation. These may be caused by the following, e.g.:

- Sensor
- Process
- Voltage supply
- Signal processing

#### Fault rectification

The first measure to be taken is to check the output signal. In many cases, the causes can be determined this way and the faults rectified.

#### 24 hour service hotline

Should these measures not be successful, please call in urgent cases the VEGA service hotline under the phone no. **+49 1805 858550**.

The hotline is available to you 7 days a week round-the-clock. Since we offer this service world-wide, the support is only available in the English language. The service is free of charge, only the standard telephone costs will be charged.

#### Check the 4 ... 20 mA signal

- ? No 4 ... 20 mA signal
  - Connection to voltage supply wrong
    - Check connection according to chapter "*Connection steps*" and if necessary, correct according to chapter "*Wiring plan*"
  - No voltage supply
    - Check cables for breaks; repair if necessary
  - Operating voltage too low or load resistance too high
    - Check, adapt if necessary
- ? Steady output signal with pressure change
  - electronics module or measuring cell defective
    - Exchange the instrument or send it in for repair



In Ex applications, the regulations for the wiring of intrinsically safe circuits must be observed.

**Reaction after fault rectification**

Depending on the reason for the fault and the measures taken, the steps described in chapter "Set up" may have to be carried out again.

**7.3 Instrument repair**

If a repair is necessary, please proceed as follows:

You can download a return form (23 KB) from our Internet homepage [www.vega.com](http://www.vega.com) under: "*Downloads - Forms and certificates - Repair form*".

By doing this you help us carry out the repair quickly and without having to call back for needed information.

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and, if need be, also a safety data sheet outside on the packaging
- Please ask the agency serving you for the address of your return shipment. You can find the respective contact data on our website [www.vega.com](http://www.vega.com) under: "*Company - VEGA worldwide*"

## 8 Dismounting

### 8.1 Dismounting steps

**Warning:**

Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

### 8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the electronics to be easily separable.

**WEEE directive 2002/96/EG**

This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws. Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects on humans and the environment and ensures recycling of useful raw materials.

Materials: see chapter "*Technical data*"

If you have no way to dispose of the old instrument properly, please contact us concerning return and disposal.

## 9 Supplement

### 9.1 Technical data

#### General data

Parameter, pressure	Gauge pressure, absolute pressure, vacuum
Measuring principle	Piezoresistive/Thin film DMS
Communication interface	None

#### Materials and weights

##### Materials, wetted parts

– Process fitting	316Ti
– Diaphragm	316Ti
– Diaphragm with front flush version	316Ti, Hastelloy C4
– Seal, O-ring	FPM, FKM, EPDM, NBR

##### Materials, non-wetted parts

– Internal transmission liquid	Synthetic oil, Halocarbon oil <sup>2)3)</sup>
– Housing	316Ti
– Terminal housing	316Ti
– Ground terminal	316Ti
– Plug	PA
– Cable gland	PA, 316Ti
– Plug seal	Silicone
– Connection cable	PUR

Available cable length max.	40 m
-----------------------------	------

##### Weight approx.

– Version with plug connector, cable outlet	0.2 kg (0.441 lbs)
– Version with terminal housing	0.35 kg (0.772 lbs)

Torque max.	50 Nm (36.88 lbft)
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#### Output variable

Output signal	4 ... 20 mA
Zero and span adjustable via potentiometer	±5 %
Dead time	≤ 1 ms
Step response time (10 ... 90 %)	
– Standard version	≤ 1 ms

<sup>2)</sup> Synthetic oil: For measuring ranges up to 16 bar, FDA listed for the food processing industry. For measuring ranges up to 25 bar not available.

<sup>3)</sup> Halocarbon oil: With version oil and greasefree, not with vacuum measuring ranges, not with absolute measuring ranges < 1 bar<sub>abs</sub>.



- Version for medium temperature < -30 °C (-22 °F) ≤ 10 ms
- Version for measuring ranges > 25 bar ≤ 10 ms
- Version with front-flush diaphragm ≤ 10 ms

### Reference conditions and actuating variables (according to DIN EN 60770-1)

Reference conditions according to DIN EN 61298-1

- Temperature +15 ... +25 °C (+59 ... +77 °F)
- Relative humidity 45 ... 75 %
- Air pressure 860 ... 1060 mbar/86 ... 106 kPa (12.5 ... 15.4 psi)

Determination of characteristics Limit point adjustment according to IEC 61298-2

Reference installation position upright, diaphragm points downward

Influence of the installation position depending on the chemical seal version

### Input variable

The availability of the respective measuring range depends on the corresponding process fitting.

The specifications on overload capacity are only an overview and refer to the measuring cell. Limitations due to the material and form of the process fitting are possible. The specifications on the type label always apply.

Nominal range	Overload capacity, max. pressure	Overload capacity, min. pressure
Gauge pressure		
-0.1 ... 0 bar/-10 ... 0 kPa	1 bar/100 kPa	-1 bar/-100 kPa
-0.16 ... 0 bar/-16 ... 0 kPa	1.5 bar/150 kPa	-1 bar/-100 kPa
-0.25 ... 0 bar/-25 ... 0 kPa	2 bar/200 kPa	-1 bar/-100 kPa
-0.4 ... 0 bar/-40 ... 0 kPa	2 bar/200 kPa	-1 bar/-100 kPa
-0.6 ... 0 bar/-60 ... 0 kPa	4 bar/400 kPa	-1 bar/-100 kPa
-1 ... 0 bar/-100 ... 0 kPa	5 bar/500 kPa	-1 bar/-100 kPa
-1 ... 3 bar/-100 ... 300 kPa	10 bar/1000 kPa	-1 bar/-100 kPa
0 ... 0.1 bar/0 ... 10 kPa	1 bar/100 kPa	-1 bar/-100 kPa
0 ... 0.16 bar/0 ... 16 kPa	1.5 bar/150 kPa	-1 bar/-100 kPa
0 ... 0.25 bar/0 ... 25 kPa	2 bar/200 kPa	-1 bar/-100 kPa
0 ... 0.4 bar/0 ... 40 kPa	2 bar/200 kPa	-1 bar/-100 kPa
0 ... 0.6 bar/0 ... 60 kPa	4 bar/400 kPa	-1 bar/-100 kPa
0 ... 1 bar/0 ... 100 kPa	5 bar/500 kPa	-1 bar/-100 kPa
0 ... 1.6 bar/0 ... 160 kPa	10 bar/1000 kPa	-1 bar/-100 kPa
0 ... 2.5 bar/0 ... 250 kPa	10 bar/1000 kPa	-1 bar/-100 kPa
0 ... 4 bar/0 ... 40 kPa	17 bar/1700 kPa	-1 bar/-100 kPa
0 ... 6 bar/0 ... 600 kPa	35 bar/3500 kPa	-1 bar/-100 kPa
0 ... 10 bar/0 ... 1000 kPa	35 bar/3500 kPa	-1 bar/-100 kPa
0 ... 16 bar/0 ... 1600 kPa	80 bar/8000 kPa	-1 bar/-100 kPa

Nominal range	Overload capacity, max. pressure	Overload capacity, min. pressure
0 ... 25 bar/0 ... 2500 kPa	50 bar/5000 kPa	-1 bar/-100 kPa
0 ... 40 bar/0 ... 4000 kPa	80 bar/8000 kPa	-1 bar/-100 kPa
0 ... 60 bar/0 ... 6000 kPa	120 bar/12 MPa	-1 bar/-100 kPa
0 ... 100 bar/0 ... 10 MPa	200 bar/20 MPa	-1 bar/-100 kPa
0 ... 160 bar/0 ... 16 MPa	320 bar/32 MPa	-1 bar/-100 kPa
0 ... 250 bar/0 ... 25 MPa	500 bar/50 MPa	-1 bar/-100 kPa
0 ... 400 bar/0 ... 40 MPa	800 bar/80 MPa	-1 bar/-100 kPa
0 ... 600 bar/0 ... 60 MPa	1200 bar/120 MPa	-1 bar/-100 kPa
0 ... 1000 bar/0 ... 100 MPa	1500 bar/150 MPa	-1 bar/-100 kPa
Absolute pressure		
0 ... 0.25 bar/0 ... 25 kPa	2 bar/200 kPa	
0 ... 0.4 bar/0 ... 40 kPa	2 bar/200 kPa	
0 ... 0.6 bar/0 ... 60 kPa	4 bar/400 kPa	
0 ... 1 bar/0 ... 100 kPa	5 bar/500 kPa	
0 ... 1.6 bar/0 ... 160 kPa	10 bar/1000 kPa	
0 ... 2.5 bar/0 ... 250 kPa	10 bar/1000 kPa	
0 ... 4 bar/0 ... 400 kPa	17 bar/1700 kPa	
0 ... 6 bar/0 ... 600 kPa	35 bar/3500 kPa	
0 ... 10 bar/0 ... 1000 kPa	35 bar/3500 kPa	
0 ... 16 bar/0 ... 1600 kPa	80 bar/8 MPa	

#### Deviation<sup>4)</sup>

Deviation ≤ 0.5 %

#### Influence of the product or ambient temperature<sup>5)</sup>

The following specifications apply to values within the compensated temperature range, i.e. 0 ... 80 °C (176 °F), reference temperature 20 °C (68 °F).

Average temperature coefficient of the zero signal

- Standard < 0.2 %/10 K
- Meas. ranges 0 ... 0.1 and 0 ... 0.16 bar < 0.4 %/10 K

Average temperature coefficient of the span < 0.2 %/10 K

The following specifications are valid for values not within the compensated temperature range.

Average temperature coefficient of the zero signal

- Standard typ. < 0.2 %/10 K
- Meas. ranges 0 ... 0.1 and 0 ... 0.16 bar typ. < 0.4 %/10 K

<sup>4)</sup> Relating to the adjusted span, incl. non-linearity, hysteresis and non-reproducibility.

<sup>5)</sup> Relating to the set span, incl. hysteresis and repeatability.

Average temperature coefficient of the span typ. < 0.2 %/10 K

### Long-term stability (according to DIN 16086, DINV 19259-1 and IEC 60770-1)

Long-term drift of the zero signal<sup>6)</sup> < 0.2 %/year

### Ambient conditions

Ambient temperature (note temperature derating!)

- |   |                                  |
|---|----------------------------------|
| – Cable outlet                                | -20 ... +80 °C (-4 ... +176 °F)  |
| – Round plug connector M12 x 1                | -25 ... +80 °C (-13 ... +176 °F) |
| – Angled plug connector according to ISO 4400 | -40 ... +80 °C (-40 ... +176 °F) |
| – Terminal housing                            | -50 ... +80 °C (-58 ... +176 °F) |
| – with cooling element                        | -20 ... +80 °C (-4 ... +176 °F)  |

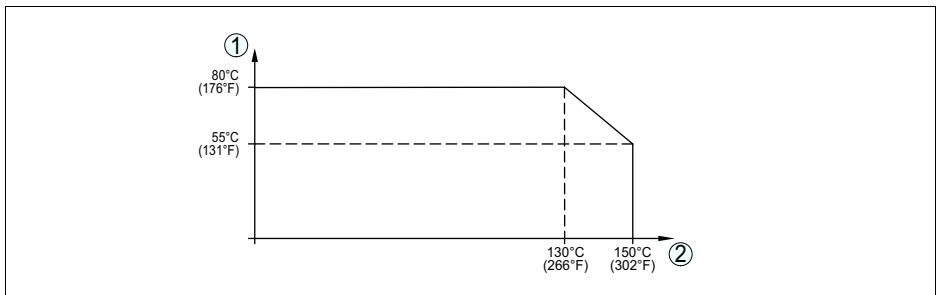


Fig. 14: Temperature derating VEGABAR 17

- 1 Ambient temperature  
2 Process temperature

Storage and transport temperature

- |                        |                                   |
|------------------------|-----------------------------------|
| – Standard             | -30 ... +100 °C (-22 ... +212 °F) |
| – with cooling element | -20 ... +100 °C (-4 ... +212 °F)  |

### Process conditions

Product temperature

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| – Standard                      | -30 ... +100 °C (-22 ... +212 °F) |
| – additional                    | -30 ... +125 °C (-22 ... +257 °F) |
| – with cooling element          | -20 ... +150 °C (-4 ... +302 °F)  |
| – Measuring ranges from 400 bar | -30 ... +70 °C (-22 ... +158 °F)  |

Shock resistance

- |                                 |  |
|---------------------------------|--|
| – Version with terminal housing | 600 g according to IEC 60068-2-27 (mechanical shock) |
|---------------------------------|--|

<sup>6)</sup> Under reference conditions, relating to the adjusted span.

- |   |   |
|---|---|
| – Version with plug connector or cable outlet | 1000 g according to IEC 60068-2-27 (mechanical shock) |
| – Version with cooling element                | 400 g according to IEC 60068-2-27 (mechanical shock)  |

**Vibration resistance**

- |  |  |
|--|--|
| – Version with terminal housing or cooling element | 10 g according to IEC 60068-2-6 (resonance vibration)    |
| – Version with plug connector or cable outlet      | 20 g according to IEC 60068-2-6 (vibration at resonance) |

**Electromechanical data****Angled plug connector**

- |                        |                             |
|------------------------|-----------------------------|
| – Version              | 4-pin according to ISO 4400 |
| – Outer cable diameter | 6 ... 8 mm                  |

**Circular plug connector**

- |           |                |
|-----------|----------------|
| – Version | 4-pole M12 x 1 |
|-----------|----------------|

**Cable outlet**

- |            |        |
|------------|--------|
| – Diameter | 6.8 mm |
|------------|--------|

**Terminal housing**

- |  |                              |
|--|------------------------------|
| – Cable entry for cable outer diameter                 | 6 ... 8 mm                   |
| – Spring-loaded terminals for wire cross-section up to | 2.5 mm <sup>2</sup> (AWG 14) |

**Voltage supply****Operating voltage**

- |                                     |                |
|-------------------------------------|----------------|
| – Version with plug or cable outlet | 10 ... 30 V DC |
| – Version with terminal housing     | 11 ... 30 V DC |

**Load**

- |                                 |  |
|---------------------------------|--|
| – Version with cable outlet     | RA ≤ (U-10V)/0,02 A- (length of the cable version in m x 0.14 Ω) |
| – Version with plug             | see diagram  |
| – Version with terminal housing | see diagram  |

**Electrical protective measures****Protection rating<sup>7)</sup>**

- |                              |                        |
|------------------------------|------------------------|
| – with angled plug connector | IP 65                  |
| – with round plug connection | IP 65                  |
| – with cable outlet          | IP 67, IP 68 (0.5 bar) |
| – with terminal housing      | IP 67                  |

Voltage resistance	Insulation according to EN 50020, 6.4, 12
--------------------	---

<sup>7)</sup> According to EN 60529/IEC 529.

## Interference resistance

- HF 10 V/m
- Burst 2 kV

## Other protective measures

- Interpolation protection Available
- Overvoltage protection up to 36 V DC

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**Approvals**

Instruments with approvals can have different technical data depending on the version.

That's why the associated approval documents have to be noted with these instruments. They are part of the delivery or can be downloaded under [www.vega.com](http://www.vega.com) via "*VEGA Tools*" and "*serial number search*" as well as via "*Downloads*" and "*Approvals*".

## 9.2 Dimensions

### VEGABAR 17 - standard housing

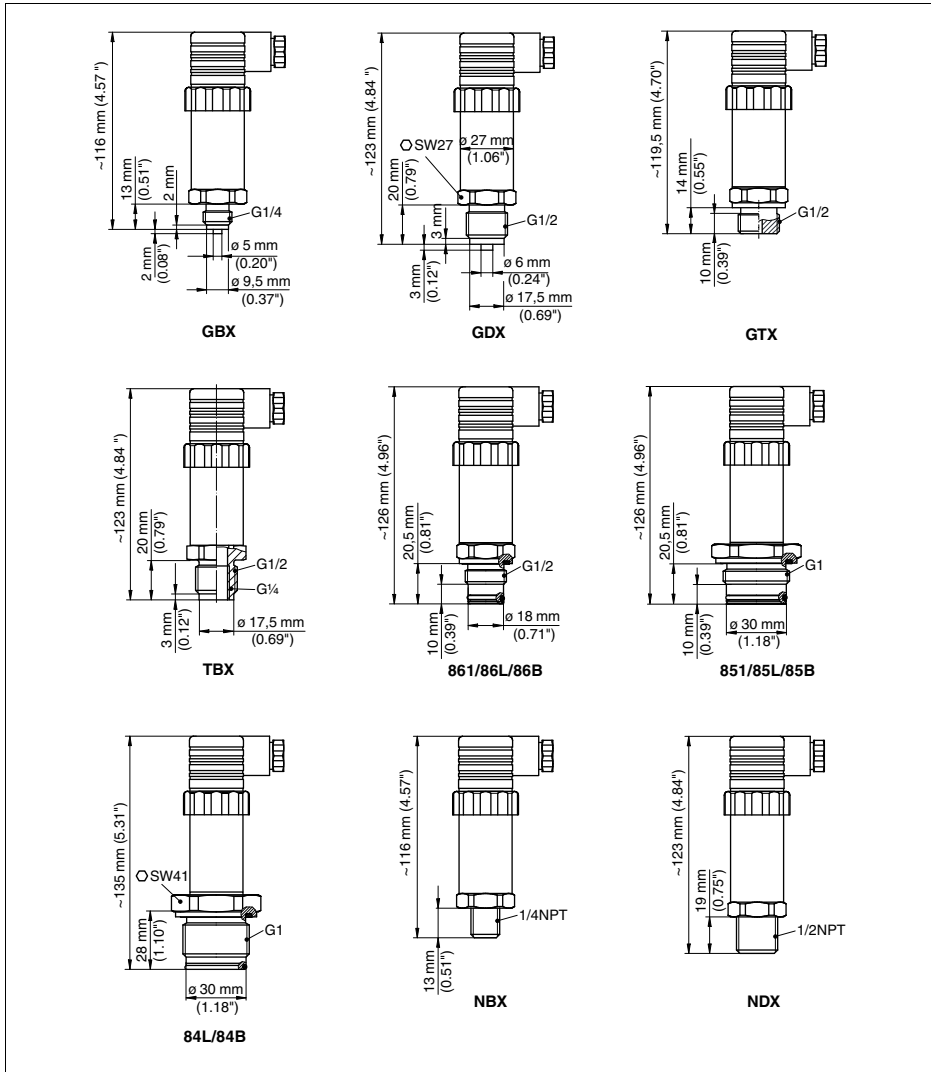


Fig. 15: VEGABAR 17 standard housing, GBX =  $G\frac{1}{4}$  B manometer connection, GDX =  $G\frac{1}{2}$  B manometer connection, GTX =  $G\frac{1}{2}$  A according to DIN 3852-E, TBX =  $G\frac{1}{2}$  B, inside  $G\frac{3}{4}$  B, 84L/84B = G1 B front-flush max. 25 bar, 851/85L/85B = G1 B front-flush with O-ring up to 1.6 bar, 861/86L/86B =  $G\frac{1}{2}$  B front-flush with O-ring > 1.6 bar, NBX =  $\frac{1}{4}$  NPT thread, NDX =  $\frac{1}{2}$  NPT thread

# VEGABAR 17 - Standard housing (Ex version)

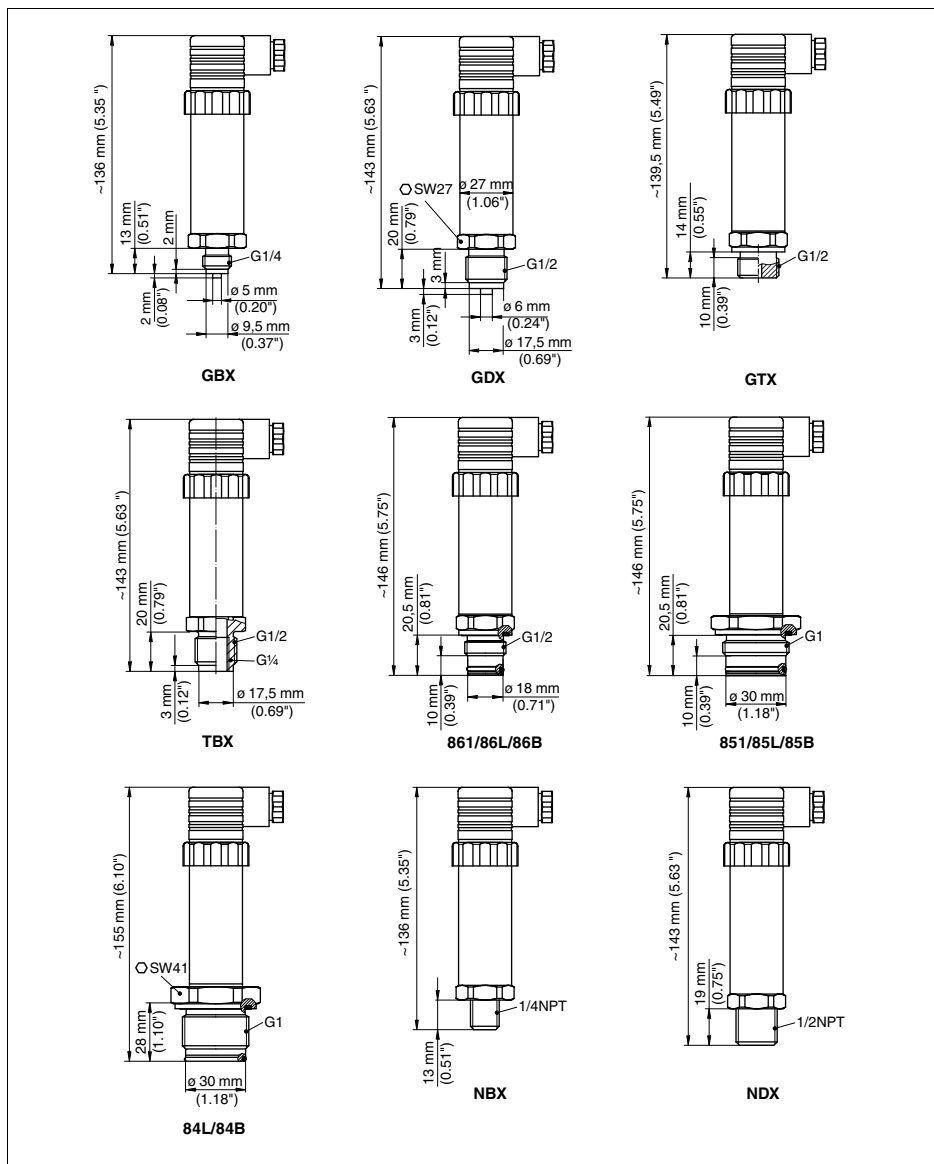


Fig. 16: VEGABAR 17 standard housing, GBX = G $\frac{1}{2}$  B manometer connection, GDX = G $\frac{1}{2}$  B manometer connection, GTX = G $\frac{1}{2}$  A according to DIN 3852-E, TBX = G $\frac{1}{2}$  B, inside G $\frac{1}{4}$  B, 84L/84B = G1 B front-flush max. 25 bar, 851/85L/85B = G1 B front-flush with O-ring up to 1.6 bar, 861/86L/86B = G $\frac{1}{2}$  B front-flush with O-ring > 1.6 bar, NBX =  $\frac{1}{4}$  NPT thread, NDX =  $\frac{1}{2}$  NPT thread

## VEGABAR 17 - terminal housing

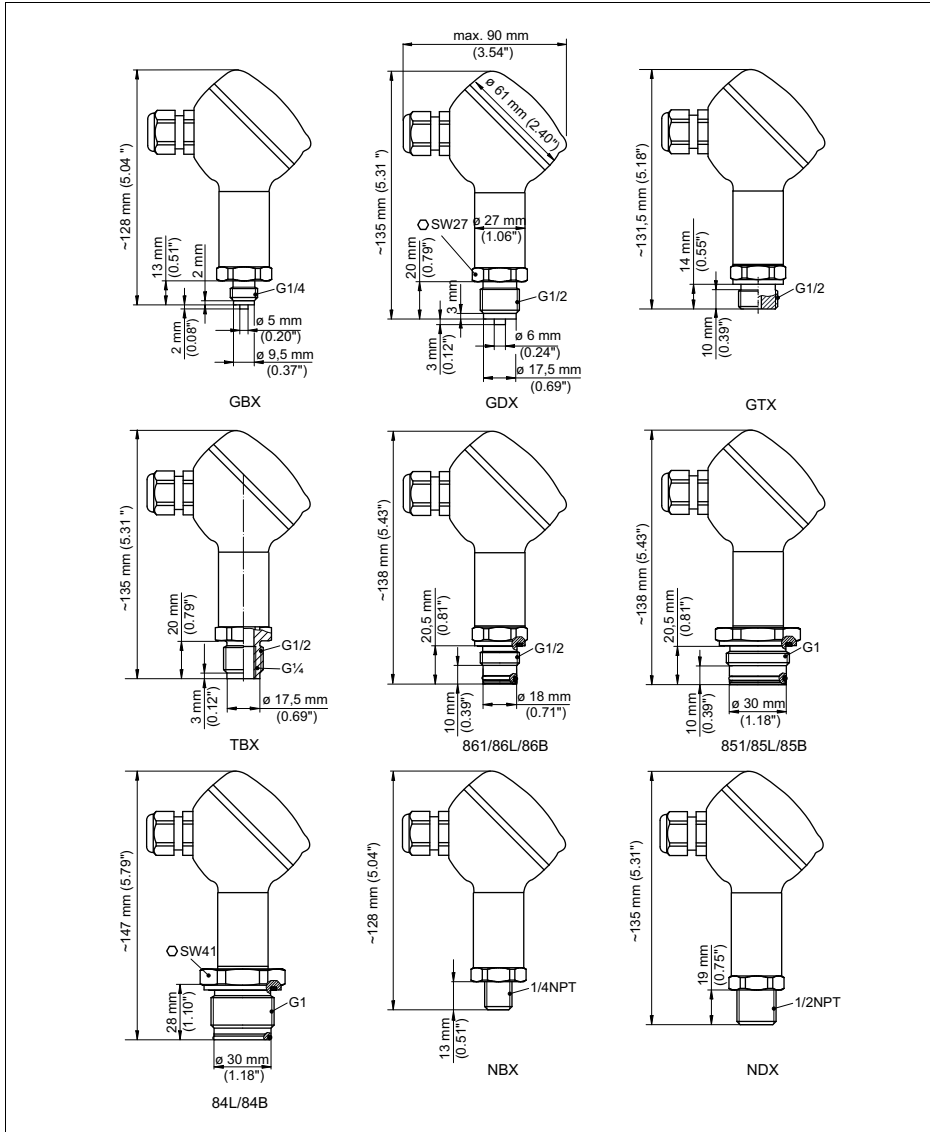


Fig. 17: VEGABAR 17 terminal housing, GBX = G $\frac{1}{4}$  B manometer connection, GDX = G $\frac{1}{2}$  B manometer connection, GTX = G $\frac{1}{2}$  A according to DIN 3852-E, TBX = G $\frac{1}{2}$  B, inside G $\frac{1}{4}$  B, 84L/84B = G1 B front-flush max. 25 bar, 851/85L/85B = G1 B front-flush with O-ring up to 1.6 bar, 861/86L/86B = G $\frac{1}{2}$  B front-flush with O-ring > 1.6 bar, NBX =  $\frac{1}{4}$  NPT thread, NDX =  $\frac{1}{2}$  NPT thread



# VEGABAR 17 - Cooling elements, plug, cable outlet

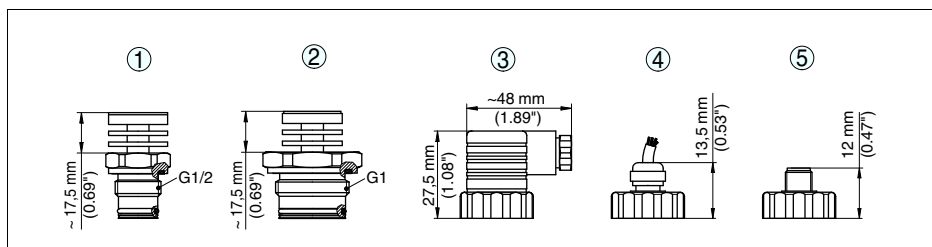


Fig. 18: VEGABAR 17 - Cooling elements, plug, cable outlet

- 1 Cooling element G $\frac{1}{2}$  B
- 2 Cooling element G1 B
- 3 Plug according to ISO 4400
- 4 Cable outlet
- 5 M12 x 1 plug





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All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

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